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A request for correction of the description and the drawings has been filed pursuant to Rule 88 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(54) **Screens**

(57) A screen, typically for use as wardrobe or closet door, comprises a flexible sheet member (1) mountable within a frame, one or more of the corners of the frame

being provided with means (5,6) for in effect varying the length of an adjacent side or sides (2b,3a) of the frame in order to vary the tension in the sheet member (1).

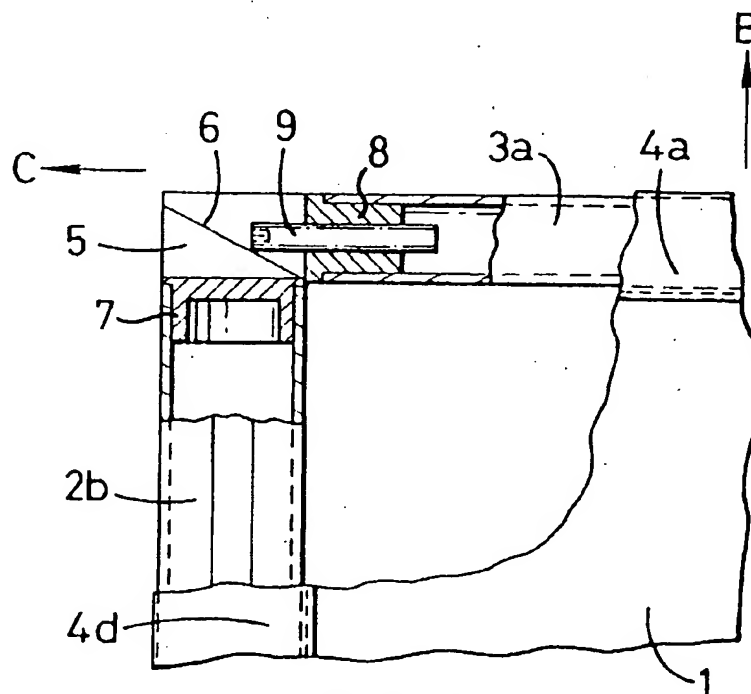


FIG. 6

Description

[0001] The present invention relates to screens, and more particularly to screens of the kind which are used to visually separate one living/office etc. area from another. However, the present invention may be utilised in relation to other environments and products.

[0002] A known construction of screen comprises a relatively flexible panel of material, typically hardboard, which is provided with a surrounding frame by which it gains rigidity. Such screens can typically be used in a domestic environment as doors for a wardrobe or closet. Such a screen may also comprise a mirror as the relatively flexible panel.

[0003] One disadvantage of such a known construction is that it is relatively difficult to transport in its assembled condition, and if it is transported in its assembled condition then there is the disadvantage that all its individual components require transit packaging and arrangements, thus creating increased costs in respect of time, material and transportation.

[0004] The present invention is concerned with providing a screen which has a construction which will overcome or minimise the above discussed disadvantages, whilst at the same time providing versatility of design and relatively low cost of manufacture plus adaptability to multifunctional use.

[0005] Although the invention has so far been discussed in terms of a product known as a screen, that terms is intended to cover any construction according to the present invention which could be used for other purposes than the ones already discussed.

[0006] According to the present invention a screen comprises a sheet member which is capable of being rolled up, in combination with at least two frame members which are adapted to be located in a periphery of the laminar member when it is in an unrolled condition, each of the at least two frame members having associated with its end or ends a mechanism whereby the two frame members may be connected together, the said mechanism being characterised by including a cam arrangement by which the relative positions of the at least two frame members may be adjusted to thereby vary the tension in the laminar member.

[0007] Typically, the sheet member would comprise a roll known type of fabric such as might be used to construct a window blind.

[0008] How the invention may be carried out will now be described by way of example only and with reference to the accompanying drawings, in which:

Figure 1 illustrates a screen kit according to a first embodiment of the present invention;

Figure 2 illustrates the screen kit of *Figure 1* in a first partially assembled condition;

Figure 3 illustrates the screen kit of *Figure 1* in a more advanced partially assembled condition;

Figure 4 is a detail on an enlarged scale of a corner

of the screen of *Figure 1* illustrating the assembly of that corner;

Figure 5 is a view of the fully assembled screen of *Figure 1*;

Figure 6 is an enlarged view, in section, illustrating the corner identified by 'A' in *Figure 5*;

Figures 7 to 10 illustrate the cam member four of which form part of the four corner connections of the embodiment of *Figure 1*;

Figures 11 to 13 illustrate the screw-mounting member which forms the other part of the corner connection of the embodiment of *Figure 1*;

Figures 14 and 15 are two views of a track upon which and along which the embodiment of *Figure 1* may be slidably mounted;

Figure 16 shows an assembly of screens each having the construction of *Figures 1 to 13*;

Figure 17 illustrates a top guide for use with the screen assembly of *Figure 16*;

Figure 18 illustrates a bottom runner for use with the screen assembly of *Figure 16*;

Figure 19 is a perspective view of a second embodiment of the invention;

Figure 20 is a perspective view on an enlarged scale of the hinged clip illustrated in *Figure 19*;

Figure 21 is a perspective view of a third embodiment of the invention;

Figure 22 is a view similar to *Figure 20* of the hinged clip shown in *Figure 21*;

Figure 23 is a perspective view of a fourth embodiment of the present invention;

Figure 24 illustrates an alternative to the arrangements of *Figures 17 and 18* for slidably connecting a screen to the track of *Figures 14 and 15*; and

Figures 25 to 29 show in more detail the runner member and cam member as shown in *Figure 24*.

Figures 1 to 6

[0009] The first embodiment of the present invention consists of a rectangular screen which would be purchased in the form of the kit illustrated in *Figure 1*.

[0010] The screen consists essentially of a roll of fabric, 1, which is mounted between and rolled up with two longitudinal frame members 2a and 2b, which are contained in pockets formed in the longitudinal sides of the fabric. The kit also includes two loose transverse frame members 3a, 3b and an Allen key, 10, the whole kit being initially contained in a box, 11.

[0011] In order to assemble the frame, the fabric, 1 is unrolled from around the two longitudinal frame members, 2a and 2b as shown in *Figure 2*.

[0012] The short exposed ends of fabric 1 have pockets, 4a, 4b formed in them.

[0013] Having unrolled the fabric to form a sheet, 1, the two transverse frame members 3a and 3b are then inserted respectively into the pockets 4a and 4b in the manner illustrated in *Figure 3*.

[0014] The ends of the longitudinal frame members 2a, 2b and transverse frame members 4a, 4b have co-operating mechanisms or arrangements by which those ends can be connected to one another and also by which the tension in the fabric 1 may be adjusted.

[0015] These mechanisms and arrangements are illustrated in more detail in *Figures 4 and 6*. *Figure 5* shows the assembled frame in its final tensioned configuration.

[0016] The connecting arrangement at each of the four corners of the rectangular screen shown in *Figure 5* is shown in more detail in *Figures 4 and 6* which illustrate the corner indicated by 'A' in *Figure 5*.

[0017] Each of the four connecting arrangements comprises a cam member, 5, which fits into the open tubular end of a longitudinal frame member 2, and an end cap 8 which fits in the end of an adjacent tubular transverse frame member 3.

[0018] The cam member 5 consists essentially of an inclined cam surface, 6, which is integral with a spigot member 7, the latter being a force-fit into the end of the tubular longitudinal frame member 4.

[0019] The cam surface 6 is provided with a slot 6a through which an Allen key 10 may be inserted to engage the end of a captive screw 9 which is threaded into the end cap 8.

[0020] The captive screw 9 is normally inserted fully within the member 8 so that the left-hand end of the screw, as viewed in *Figure 6*, is flush with the left-hand end of the member 8.

[0021] After the frame members have been located in the respective pocket 4, the end of the screw member 9 is engaged by the Allen key 10 and rotated so as to make it progressively emerge from the member 8 and contact the cam surface 6, as shown in *Figure 6*.

[0022] As the screw 9 is progressively drawn out of the member 8, the left-hand side of the screw member 9 will ride up the cam surface 6 which will have the effect of moving the transverse frame member 3a in *Figure 6* in the direction of the arrow 'B', and the frame member 2b in the direction of the arrow 'C' to thus tension the material 1 forming the screen.

[0023] By adjusting each of the screws 9, associated with each of the four corners of the frame, the overall tensioning of the material 1 can be effected.

[0024] The two components 5 and 8 are shown in more detail in *Figures 7 to 10 and 11 to 13* respectively.

[0025] Although a particular cam arrangement has been illustrated in connection with the first embodiment of *Figure 1*, variations may be made to the design of this cam arrangement without departing from the scope of the present invention, as defined in the claims. For example, the detailed design of member 5 may vary as might the cam surface 6 itself. Moreover a different arrangement for mounting the screw 9, or its equivalent, could be employed whilst at the same time resulting in a mechanism which operates in substantially the same way as that described and shown in *Figures 4 and 6* of

the drawings.

Figures 14 and 15

5 [0026] The embodiment shown in *Figure 1* could form part of a screen arrangement in which one or more panels are slidable with respect to one another. Such a typical arrangement would be employed in connection with a wardrobe or closet.

10 [0027] In that application a track would be provided along which a screen or screens as shown in *Figure 1* may be slid. Such a track is illustrated in *Figures 14 and 15* and comprises a plastic extrusion 12, having two channels 13 and 14, to slidably accommodate a panel 15 such as that shown in *Figure 1*.

Figures 16 to 18

20 [0028] *Figure 16* illustrates an arrangement which employs three screens, 1a, 1b and 1c, each essentially of the construction as shown in *Figure 1*. The screens 1a, 1b and 1c are slidable with respect to one another on a double sliding track 12, of the construction shown in *Figures 14 and 15*.

25 [0029] The top of each panel 1a, 1b and 1c is provided with a spring-loaded guide peg 15 as shown in *Figure 17*. Each peg 15 has a head 15a, which runs in an upper track (not shown), and a lower end 15b, which engages a coil spring 16 which is housed in a cavity formed in the screw 9.

30 [0030] The bottom end of each panel 1a, 1b and 1c is provided with a bottom runner 16 shown in *Figure 18*. Each bottom runner 16 consists of a screw thread 16a and a head 16b, the latter being designed to slide within the channel 13 or 14 in the track 12.

Figures 19 to 22

40 [0031] In contrast to providing a means to enable the screen or screens to slide with respect to one another between upper and lower runners, it is also possible to utilise a screen, according to the present invention, as a free-standing item. Such an application is illustrated in *Figures 19 and 20*.

45 [0032] The screen 1 is provided with two feet 17 (only one which is shown), the construction of which is shown in more detail in *Figure 20*.

[0033] Each foot 17 comprises a web 18 and two socket or clip portions 19 and 20, located at substantially ninety degrees to one another.

50 [0034] The socket or clip 19 is adapted to fit around and grip the longitudinal frame member 4 and the socket or clip 20 is adapted to slide around and grip the transverse frame member 3.

55 [0035] Typically the foot 17 is constructed from pressed steel but it could be other material such as a plastics material.

[0036] The web 18 is provided with two feet exten-

sions **18a** and **18b** which would sit on a floor when the screen is in use. A similar foot would be provided at the other end of the transverse frame member **3**.

[0037] *Figures 21 and 22* illustrate yet another embodiment of the present invention in which two screens, **1a** and **1b**, are hingedly connected together by means of the hinged clip **21** as shown in *Figure 22*.

[0038] The hinged clip **21** comprises two socket-like members **22** and **23** which are mounted on a common hinge pin **24**.

[0039] Typically, a pair of these hinge clips **21** interconnect two screens **1a** and **1b**, as shown in *Figure 21*.

Figure 23

[0040] A further embodiment of the invention is illustrated in *Figure 23*. Unlike the previous embodiments the screen illustrated in this drawing is curved instead of being flat. Typically it could be semi-circular in plan view.

[0041] The principle of construction is exactly the same as in the previous embodiments, the only difference being that the transverse frame members **3** are curved instead of straight.

Figures 24 to 29

[0042] Instead of the arrangement of *Figures 17 and 18*, the arrangement of *Figures 24 to 29* would preferably be used to provide the sliding connection between the bottom and top of a screen and the bottom and top runners of

Figures 14 and 15.

[0043] With the arrangement of *Figures 24 to 29*, essentially the same component **24** is used to provide both the top and bottom guide member, unlike the arrangement of *Figures 17 and 18* in which two different items **15** and **16** are employed.

[0044] The common runner guide component **24** has a body portion **24a**, into which the threaded end of the screw **9** engages, and a split-head portion **24b** which engages in the channel **14** of the runner member **12**.

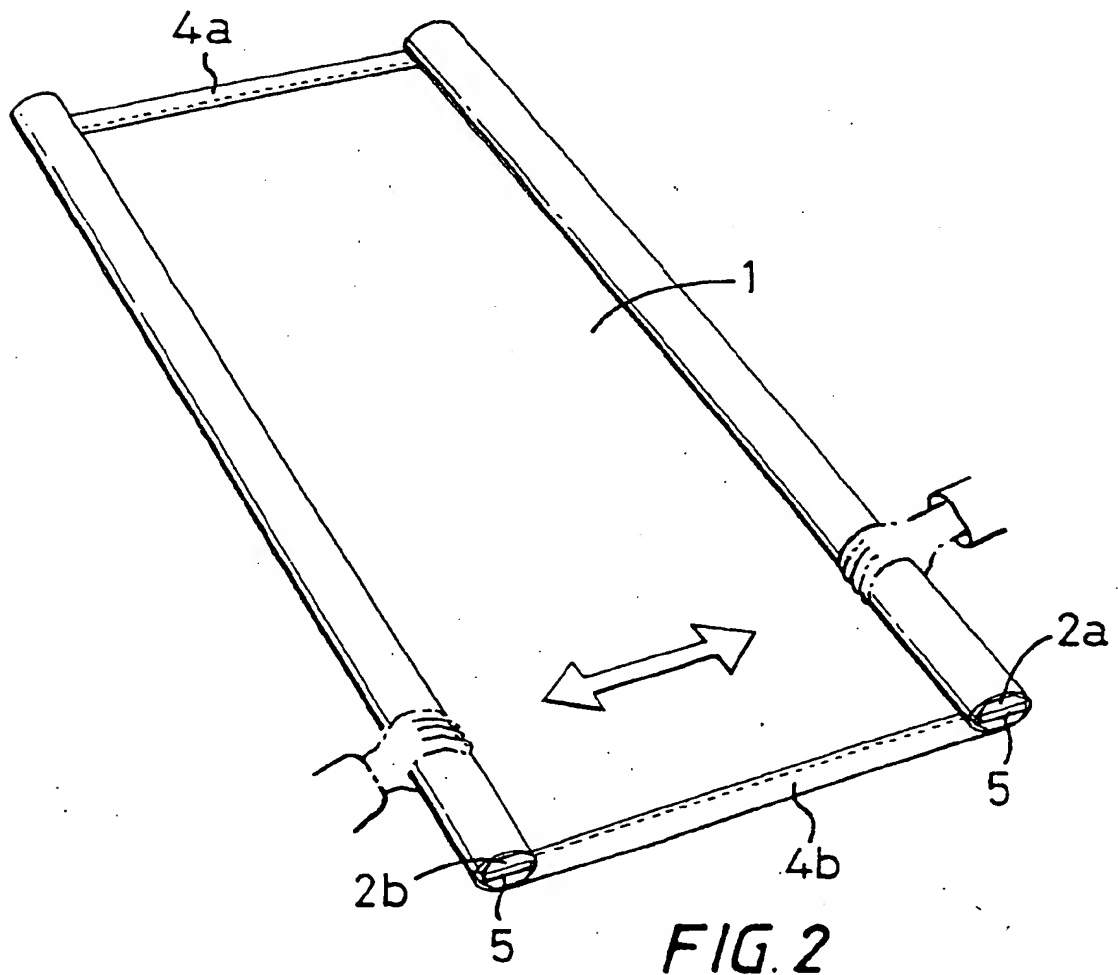
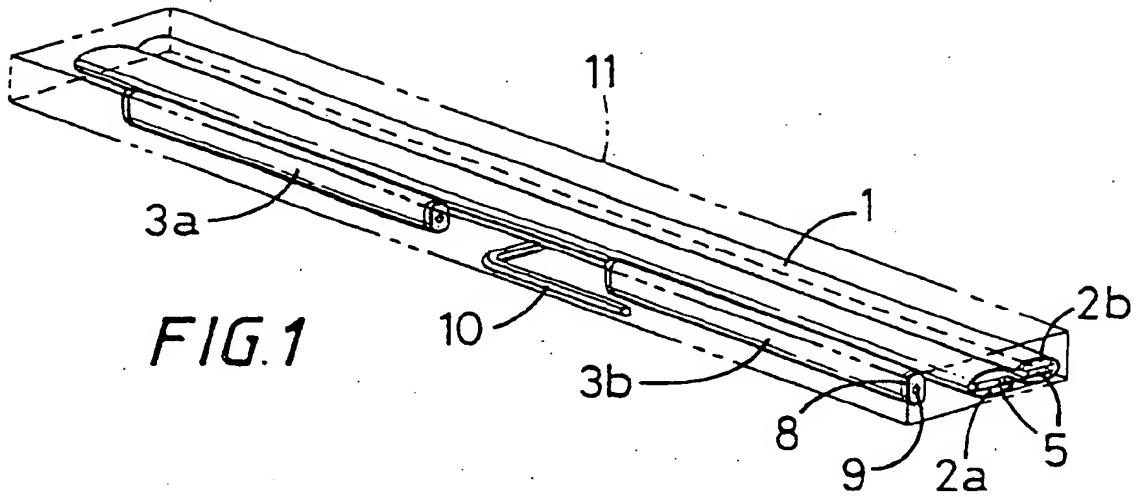
[0045] A similar guide component **24** would be mounted on the other end of the screen frame in order to engage in a bottom runner **12**, assuming that the runner **12** shown in *Figure 24* is the top runner.

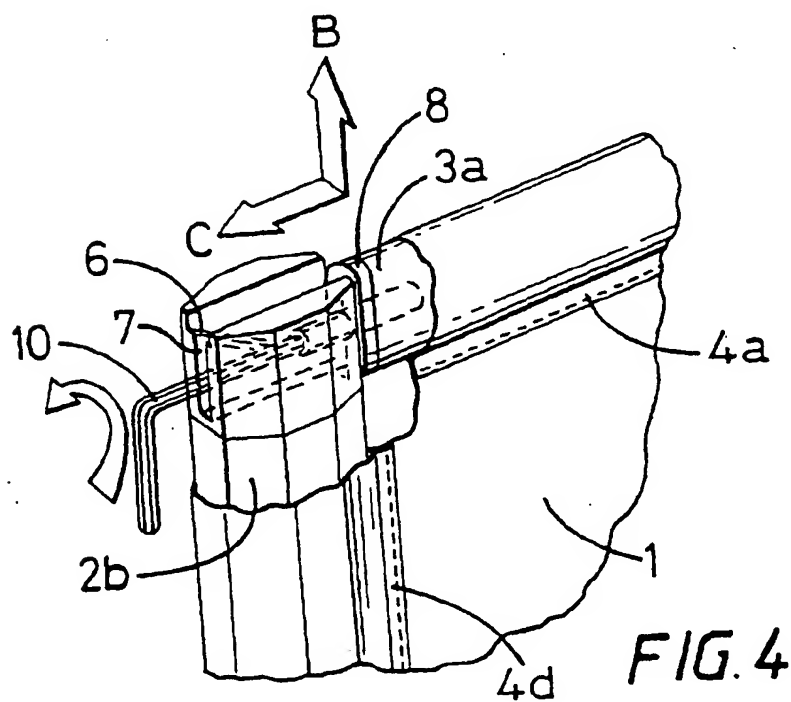
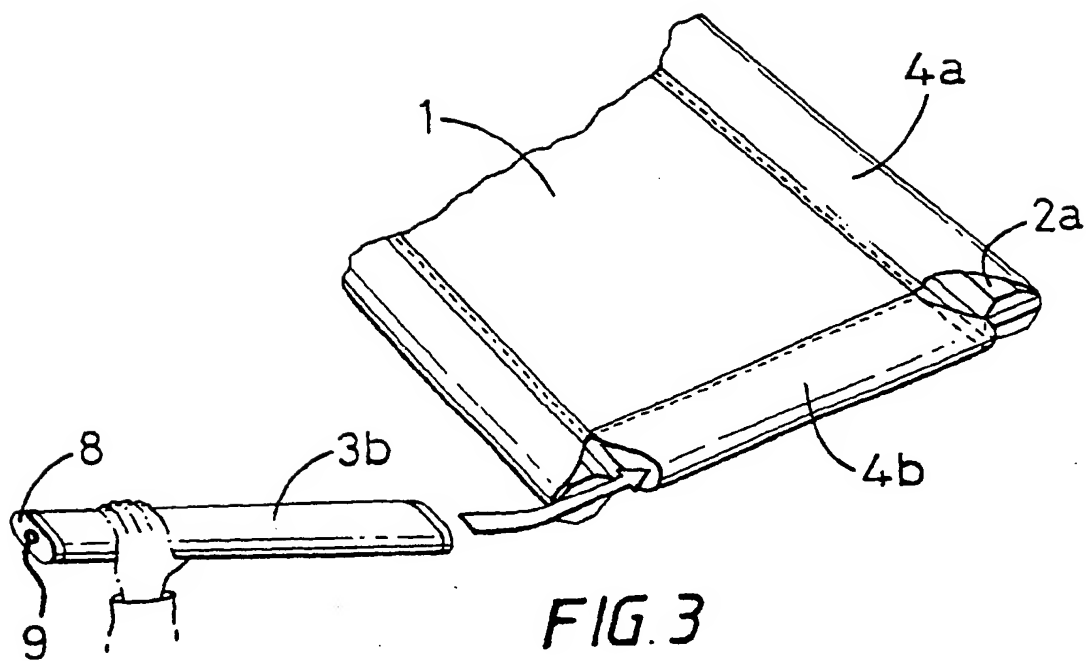
Claims

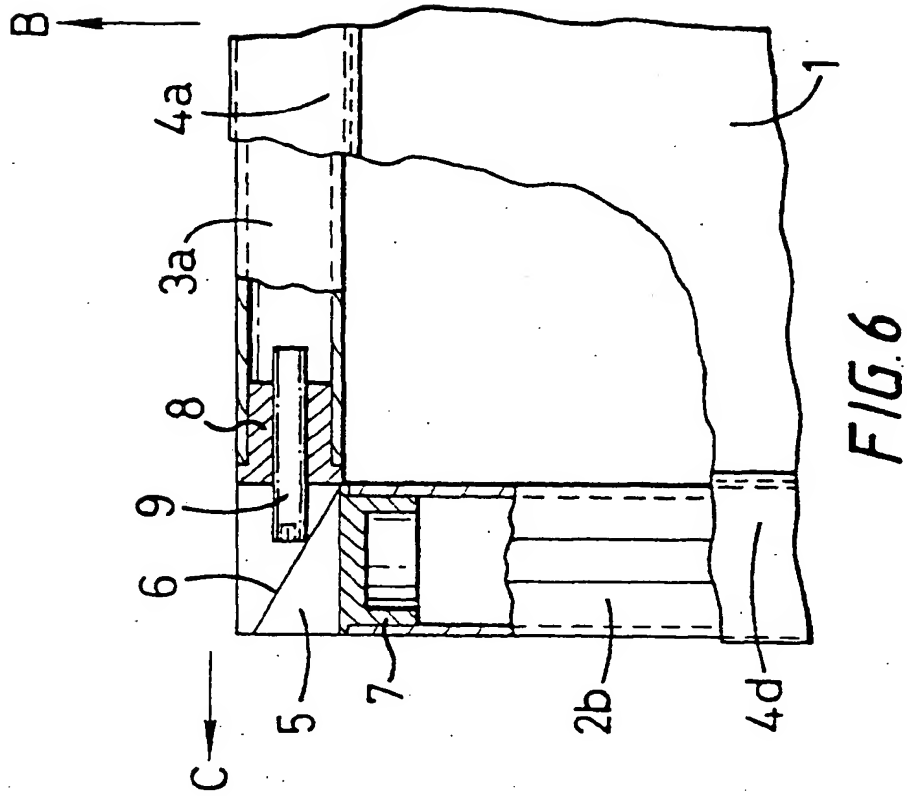
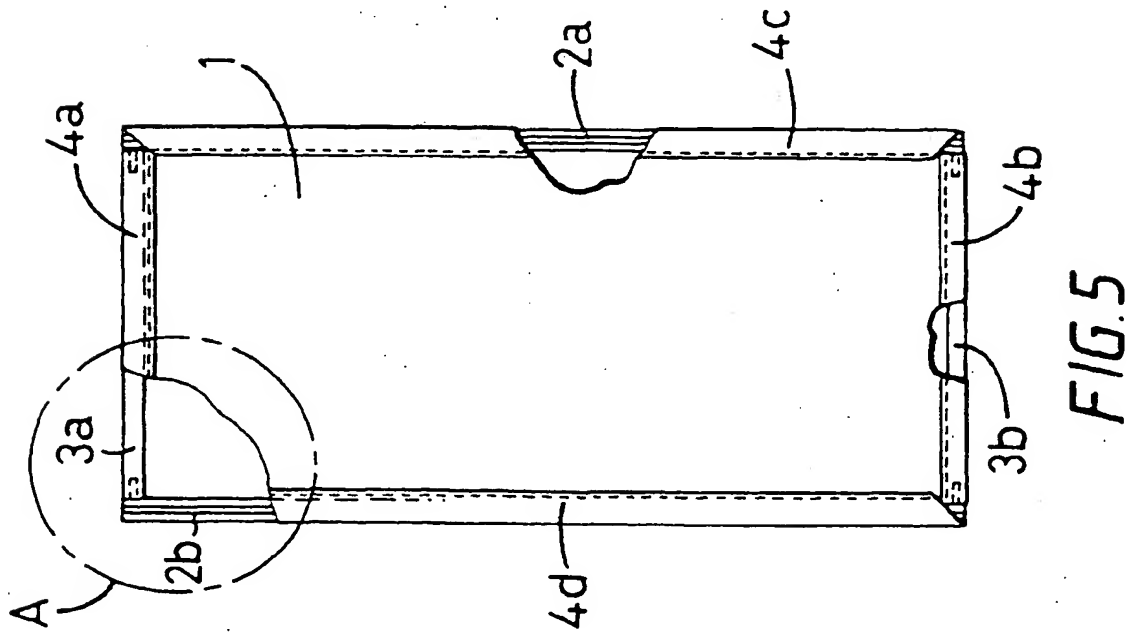
1. A screen comprises a sheet member which is capable of being rolled up, in combination with at least two frame members which are adapted to be located in a periphery of the laminar member when it is an unrolled condition, each of the at least two frame members having associated with its end or ends a

mechanism whereby the two frame members may be connected together, the said mechanism being characterised by including a cam arrangement by which the relative positions of the at least two frame members may be adjusted to thereby vary the tension in the laminar member.

2. A screen as claimed in claim 1, in which the cam arrangement comprises a cam surface carried on the said one end of a first frame member and a screw member carried on one end of a second frame member such that, in use, rotation of the screw causes its free end to ride up or down the cam surface to vary the tension applied by the frame to the sheet member.







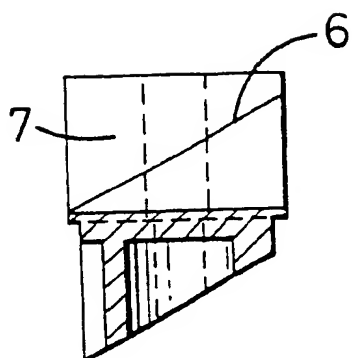


FIG. 7

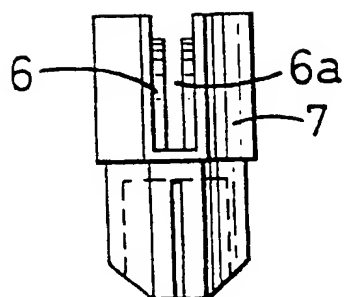


FIG. 8

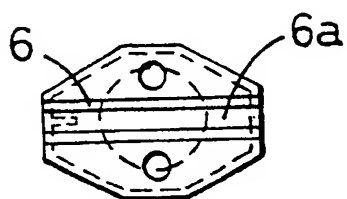


FIG. 9

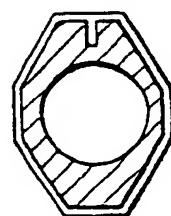


FIG. 10

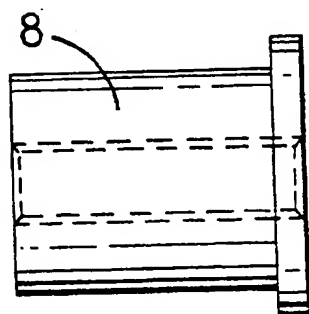


FIG. 11

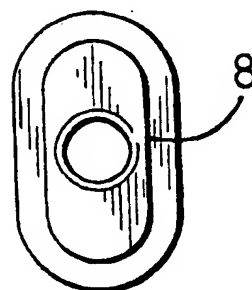


FIG. 12

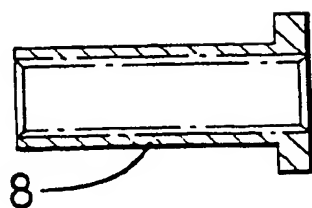


FIG. 13

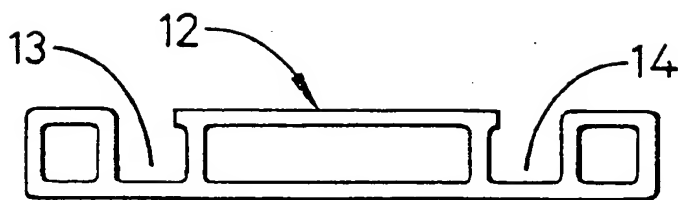


FIG. 14

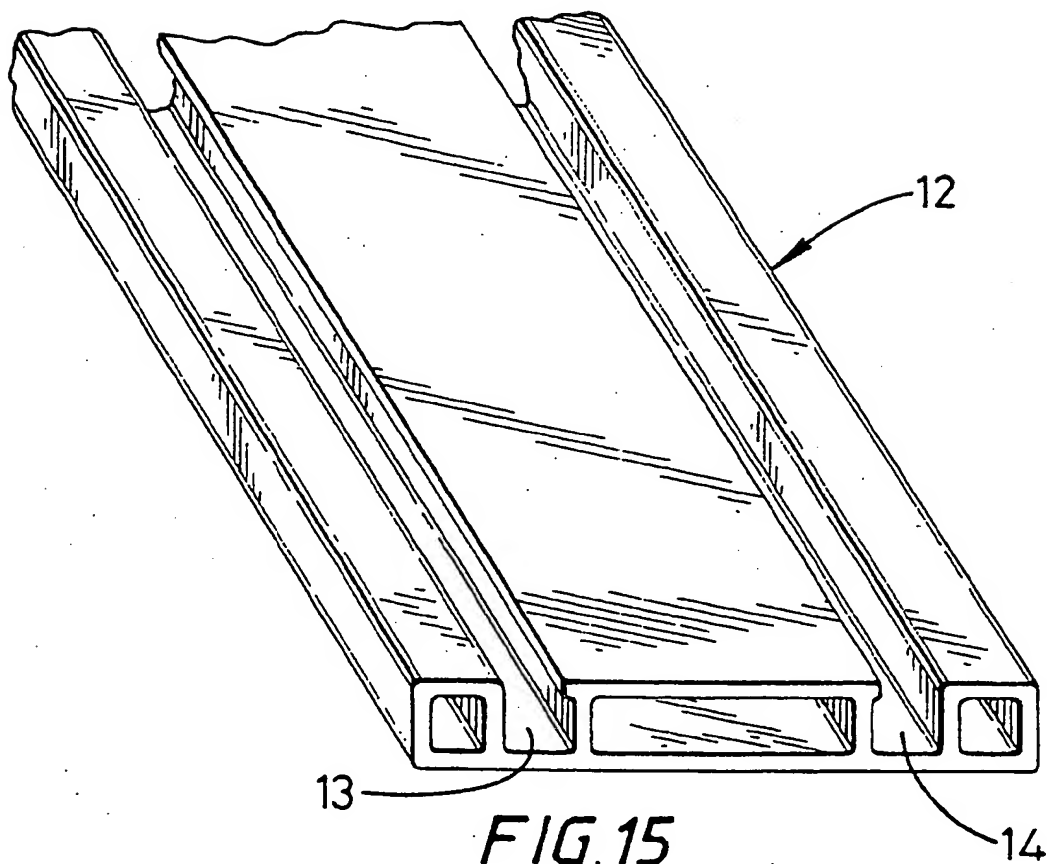
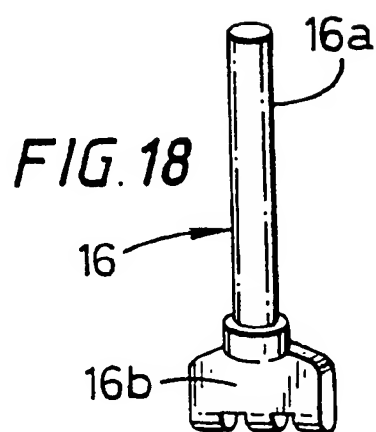
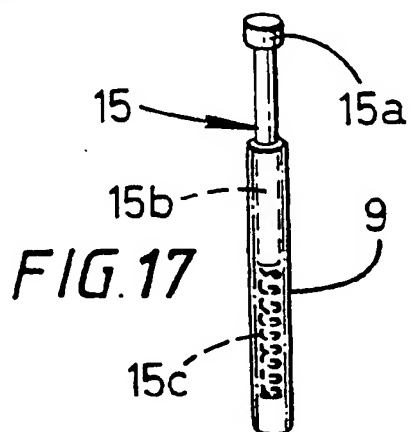
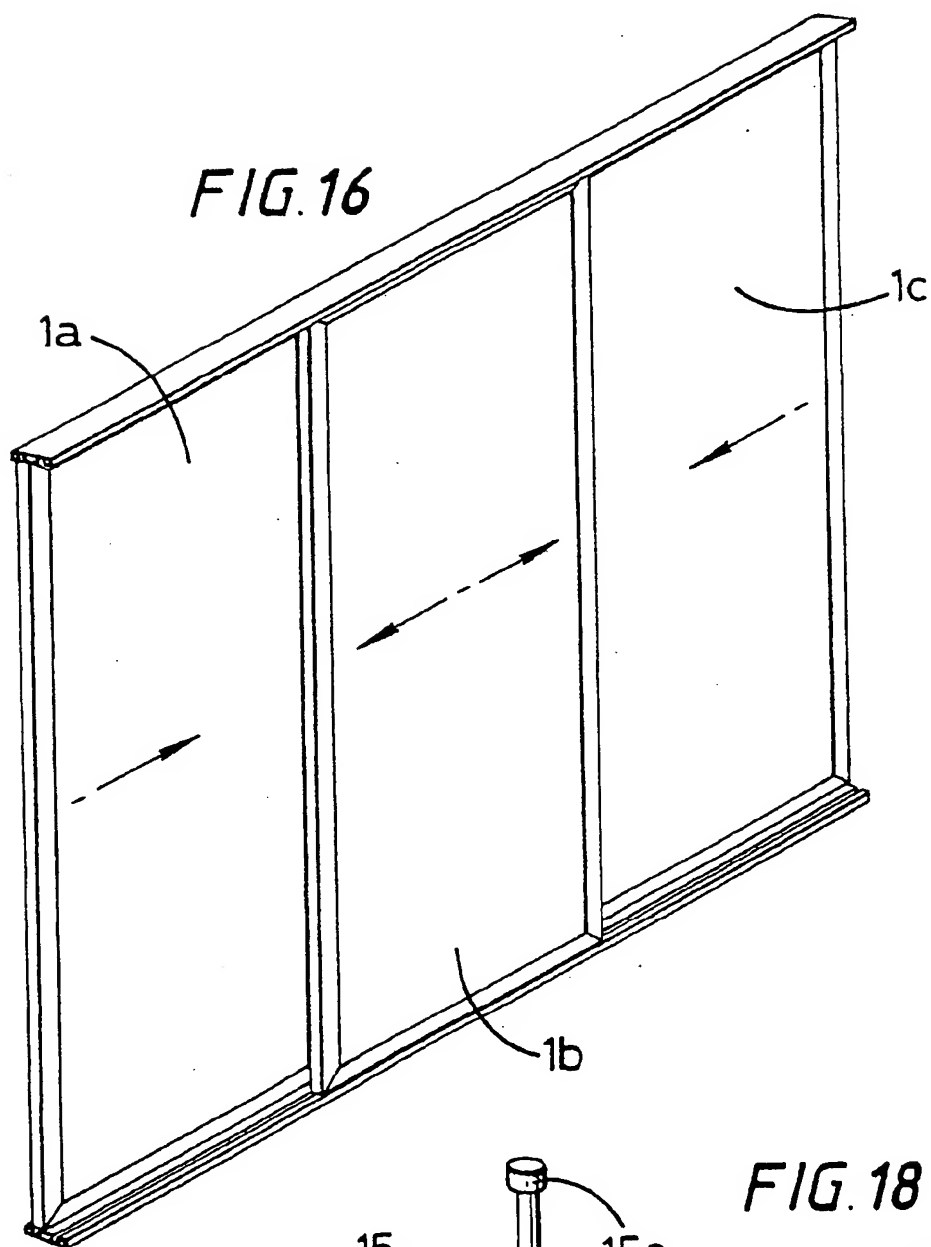


FIG. 15



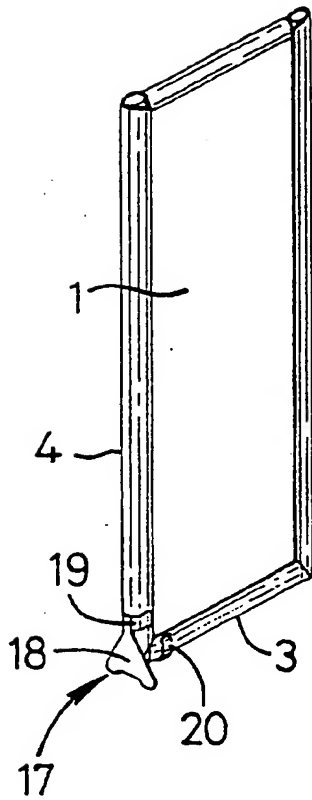


FIG. 19

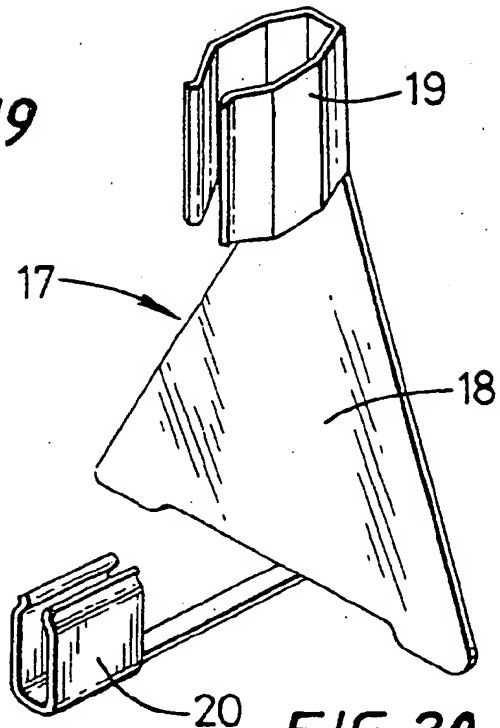


FIG. 20

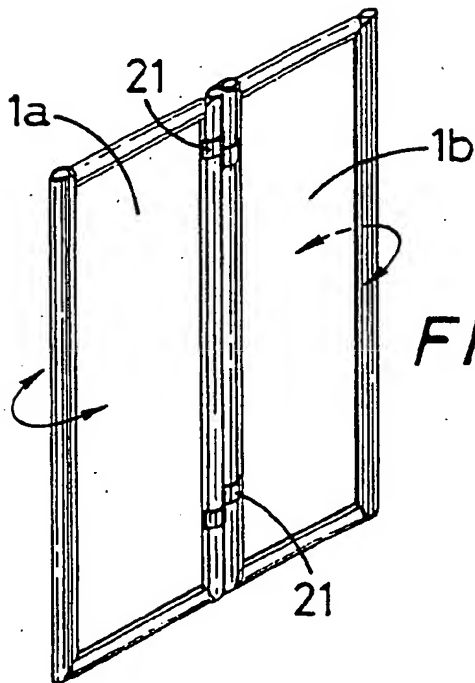


FIG. 21

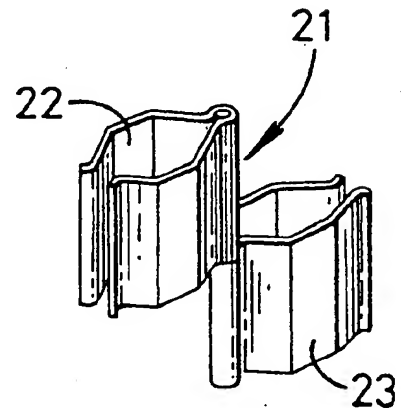


FIG. 22

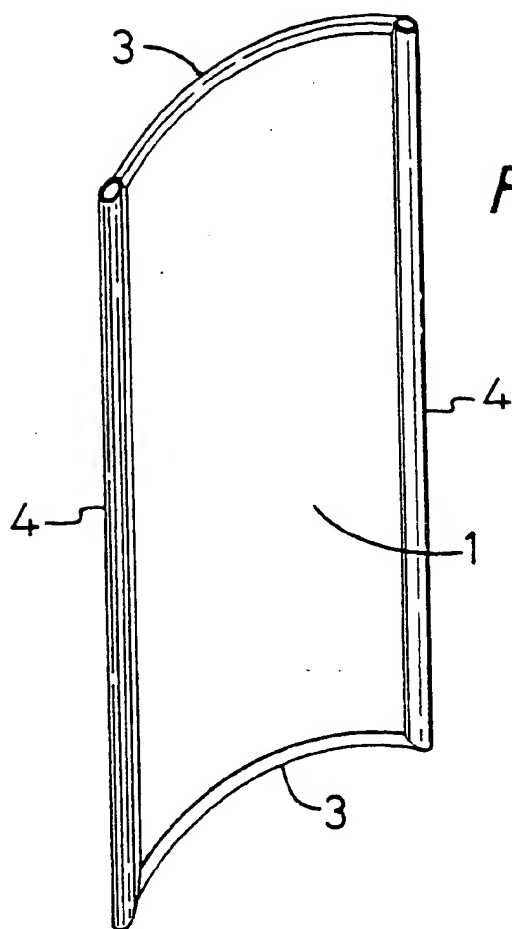


FIG. 23

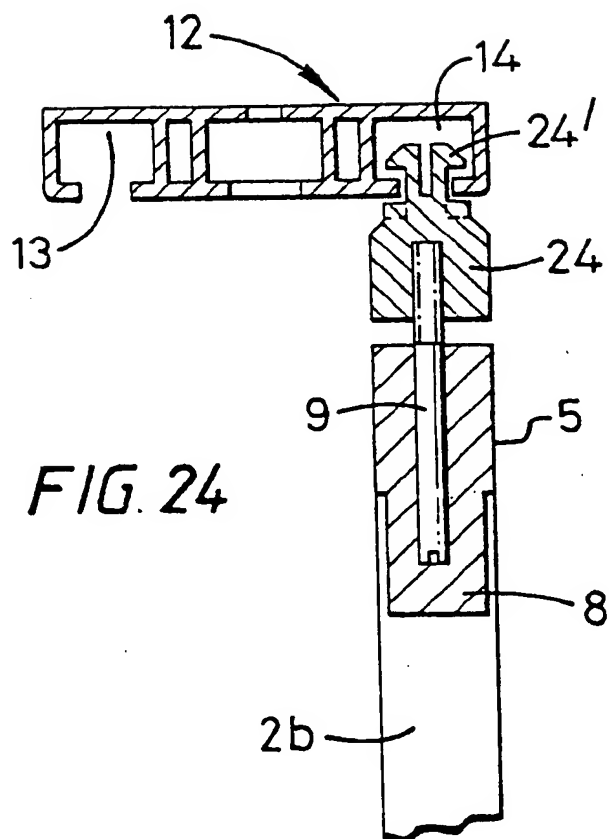
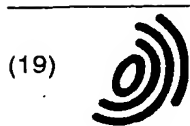


FIG. 24



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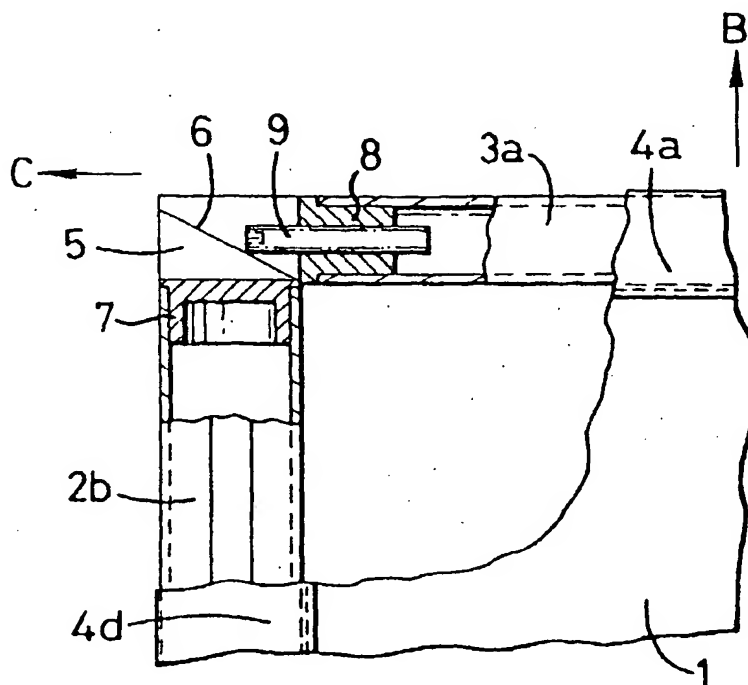


FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 00 31 0162

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 1 964 332 A (REBBAUM ELI L) 26 June 1934 (1934-06-26)	1	A47B43/04
A	* the whole document *	2	A47G5/00
X	WO 92 20535 A (BOSCOTT MARTIN HOWARD ;BOSCOTT HILARY INGRID CLAIRE (AU); HERRELL) 26 November 1992 (1992-11-26)	1	E06B9/24
A	* page 8, line 2 - page 10, line 28; figures 1-4 *	2	E06B9/52
X	US 371 934 A (GRAY H.F.) 25 October 1887 (1887-10-25)	1	E06B3/72
A	* the whole document *	2	F16B5/06
A	US 69 447 A (KELLOGG M.K.) 1 October 1867 (1867-10-01)	1,2	D06C3/08
A	US 3 949 802 A (BURATOVICH PROSPER) 13 April 1976 (1976-04-13)	1,2	B44D3/18
	* column 3, line 35 - column 4, line 23; figures 3,4 *		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B44D
			A47G
			A47B
			E04B
			E06B
			F16B
			E04H
			B41F
			A01G
			D06C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		5 February 2002	Depoorter, F
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EP 00 31 0162

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The members are as contained in the European Patent Office EDP file on
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05-02-2002

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US 69447	A		NONE	
US 3949802	A	13-04-1976	NONE	

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